Spreading of the Lifshitz-Slezov-Wagner Theory on Liquid Media

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A generalized Lifshits-Slezov-Wagner distribution [1] for nanoclusters or nanocrystals growth according to two parallel mechanisms (Wagner and diffusion) has been used to explain a series of experimental histograms, which cannot be correctly related to the Wagner or the Lifshits-Slezov distribution separately. A process of the nanoclusters growth at the Ostwald ripening stage of the phase transformation in the solid systems can be correctly described using the generalized distribution of Lifshits-Slezov-Wagner.

The Ostwald ripening stage is also present in a process of formation of a new semiconducting nanoclusters phase (phase transformation of the first type) during chemical synthesis of nanoclusters in the liquid medium. That is why the Lifshits-Slezov-Wagner theory can be used for analysis of the mechanism and kinetics of the *ZnO* and *SnS* nanoclusters [2,3] formation from supersaturated solutions. The theory should be modified taking into account possible joined influences of both (Wagner and diffusion) mechanisms on the process of the growth of the nanoclusters.

As a result, the *SnS* nanoclusters experimental histograms were found in good correlation with the generalized distribution of Lifshits-Slezov-Wagner at various values of x. The rate of the nanocluster's growth is controlled mostly by formation of new chemical bonds or a surface chemical reaction, which runs on the nanocluster's surface.

The growth of the *ZnO* nanoclusters can be controlled by any of the Wagner's or diffusion mechanisms.

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